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Meaning making as an interactional accomplishment: A temporal analysis of intentionality and improvisation in classroom dialogue



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ABSTRACT

In this paper we offer a significant development of Baldry and Thibault's (2006) notion of a 'meaning-making trajectory' to explore the collective, and often improvisational, interactional processes of meaning making in classroom dialogue. We report a sociocultural discourse analysis (Mercer, 2004) of a series of history lessons with a class of 6–7 year-old children, which utilises the notion of 'meaning potential': to highlight the valuable distinction and flexible interplay between a teacher's *intended* meaning-making trajectory, and the meaning-making trajectories that are *instantiated* in interaction with pupils through dialogic interaction. We argue that where disparities are identified, often through pupils' unexpected questions or contributions, there can be valuable teaching-and-learning opportunities for collaboratively constructing and appropriating common knowledge.

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1. Introduction

Building on sociocultural research concerning the importance of talk and participation in classroom dialogue for learning, our objective in this paper is to identify and evidence how meaning making can occur over time and be observable through dialogic interaction. Our work was designed to address the current paucity of research concerning the temporal dimensions of learning (Mercer, 2008). Drawing on sociocultural theory, we explore meaning making as a dynamic and situated facet of classroom interaction, as it unfolds in context. We particularly focus on how the process of meaning making is resourced through the use of talk between teacher and pupils, identified as important by Mercer (2004) and Alexander (2008a), and the use of objects or 'mediating artefacts' (Wertsch, Tulviste & Hagstrom, 1993). We combine these interests to investigate how the development of understanding is supported as an ongoing process, in planned and unplanned ways. We present extracts of data, and their associated analytic commentaries, drawn from an extensive sociocultural discourse analysis (Mercer, 2004; Mercer & Littleton, 2007) of a series of History topic lessons with 6–7 year-old pupils to address our research questions:

- How is meaning making observable and supported by the teacher, in planned and unplanned ways, through classroom dialogue?

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- How does the presence and uptake of pupils' contributions, and evolving patterns of talk, offer evidence of the co-construction of understanding over time?

In addressing these research questions we offer significant extensions of existing theoretical concepts and highlight the importance, for researchers and other education professionals of attending to facets of everyday classroom interaction that are typically overlooked or neglected. The paper also explores the crucial interplay and flexibility between a teacher's intentions for a lesson and the actual interactions as they unfold, in offering meaningful learning opportunities that engage pupils' natural curiosity.

In considering the important temporal dimension of teaching-and-learning, a central concept that we have extended and developed is Baldry and Thibault's (2006) notion of 'meaning-making trajectories'. A meaning-making trajectory, as originally characterised by Baldry and Thibault, refers to individuals working through webpages, and how website users are drawn to, select and move through the various links and pages available to them to construct meaning. We offer an important and distinctive re-contextualisation and extension of this concept within the dynamic interactional environment of the classroom. Rather than investigating individually constituted trajectories in the context of web use (cf. Baldry & Thibault, 2006), we offer a dialogic characterisation by considering trajectories of meaning-making as they emerge and are negotiated through classroom interaction. We explore the activities 'orchestrated' by the teacher: as planned, or intended dialogic meaning-making trajectories. In this we draw on Bourne and Jewitt's (2003) and Littleton, Twiner and Gillen's (2010) notion of orchestration, which draws attention to how resources and activities are foregrounded, backgrounded, and interwoven to support meaningful teaching-and-learning experiences. Here we interpret 'intention' in terms of the activities and resources prepared beforehand by the teacher and introduced in the lesson, whilst mindful that this may include a teacher's intention to improvise from their resources as appropriate. In this paper we look closely at understandings and meanings made by the pupils, including those constituted in interaction with the teacher, and how meanings were negotiated and collaboratively constructed in interaction. Thus in re-contextualising Baldry and Thibault's concept, and as a distinctive contribution of our work around the temporal and interactional nature of teaching-and-learning, we address the teacher's *intended* meaning-making trajectory in the context of the meaning-making trajectories that were *instantiated* by the pupils as the lessons unfolded over time. In this we draw on the notion that communicative acts have 'meaning potential' (Furberg, 2010), to consider how meaning is made from various possible interpretations. We offer both teacher and pupil perspectives of meaning-making trajectories as interactionally realised, through the sharing and negotiation of meaning potentials. We argue for the value of identifying any differences between intended and instantiated meaning-making trajectories, as we refer to them, as valuable teaching-and-learning opportunities for collaboratively constructing and appropriating common topic knowledge.

In terms of the teacher's view, Mercer (2008) argued that, 'Good teachers will almost certainly conceptualise a learning trajectory for their students, albeit implicitly, and will know how dialogue can be used to transform this conception into social action' (p. 56). This corresponds to our consideration of *intended* meaning-making trajectories. In our analysis we acknowledge this view, of the teacher's intentions for a lesson, and align it with a view of *instantiated* meaning-making trajectories, as constructed by pupils in the unfolding flow of lessons. We particularly explore these two notions within this analysis, and what happened when the teacher's 'conceptualisation' met pupils' interpretations.

By focusing more on pupil responses and the teacher's subsequent uptake of responses, as we do in the analysis that follows, we gain some insight into how closely the *intended* meaning-making trajectory prepared and supported by the teacher mapped onto the *instantiated* meaning-making trajectories experienced by the pupils. In this we offer a significant re-working of Baldry and Thibault's concept of a meaning-making trajectory, to focus on the potential for differences between the planned/intended and the experienced/instantiated meanings as they were made and re-made through dialogue. We also utilise Agar's (1994) concept of 'rich points', and Green, Yeager and Castanheira's (2008) similar concept of 'frame clashes', to consider the value of exposing difference of opinion. We explore how the voicing of alternative viewpoints or misunderstandings serves to expose difference in participants' perspectives, and how such differences can be subsequently negotiated through classroom dialogue, in the unfolding process of constructing shared meaning. Our use of sociocultural discourse analysis, as outlined in Section 2.1, allowed us to identify where such rich points or frame clashes occurred, and so consider how meanings were collaboratively negotiated and instantiated, and intentions modified in responding to pupils' contributions.

Within this analysis we consider the concept of communicative approach (Mortimer & Scott, 2003) and how this can be applied in the context of collaborative meaning making. We address this in the sense of whether or not pupils are invited to interact with lesson resources or ideas – through talking about them or physically moving resources – (interactive/non-interactive), and whether or not the teacher allows for or acknowledges more than one interpretation or view (dialogic/authoritative). As alluded to above, this also entails a consideration of how a teacher 'orchestrates' (Bourne & Jewitt, 2003; Littleton et al., 2010) such dialogic, technological and physical resources, in supporting the negotiation of meanings. Similarly, Breen (1998) refers to how learners 'navigate the discourse', which is orchestrated by the teacher. As we focus largely on classroom talk in this paper, and how the teacher utilises pupils' verbal contributions, Alexander's (2008a) statement is relevant here: 'it is the qualities of extension and cumulation which transform classroom talk from the familiar closed question/answer/feedback routine into purposeful and productive dialogue where questions, answers and feedback progressively build into coherent and expanding chains of enquiry and understanding' (p. 26). In our analysis we focus particularly on how such opportunities for interaction and dialogue were allowed for by the teacher, and how dialogic

exchanges initiated by the teacher or pupils were spontaneously worked with in constructing a shared instantiated meaning-making trajectory that aligned with or altered the teacher's intended meaning-making trajectory: how meaning potential was interactionally transformed into cumulative meaning making. Thus we draw on the distinction of learning experiences as continuous – linking to what has gone before and what is yet to come – and cumulative – as progressive integration of events and concepts (Alexander, 2008a; Mercer, 2008). Both continuity and cumulation are significant educational aims, but cumulation is identified as being more important but potentially more difficult and rare in practice (Alexander, 2008b).

A meaning-making trajectory therefore may follow unanticipated routes, whereby the need for teacher improvisation arises. In this we draw on the work of Sawyer (2004) who described teaching as involving 'disciplined improvisation', re-working a common metaphor of teaching as performance. We extend this characterisation by showing how the nature of a teacher's response to such unexpected situations, either in attempting to adhere to the plan or in exploring pupils' interpretations, influences the negotiation and appropriation of meanings, and the extent to which an intended and instantiated meaning-making trajectory may ultimately be aligned. Highlighting how this process of negotiation and appropriation is observable through attention to classroom interaction has large potential significance for teachers and researchers alike, as also addressed by researchers including Kelly Hall, Hellermann, and Pekarek Doehler (2011) and Walsh (2011), and as we evidence in Section 3.

2. Methods of data collection and analytic approach

Adopting a case study approach (Gomm, Hammersley, & Foster, 2000; Yin, 2008), we collected data from three London-based primary schools. We worked with one class from each school, who were involved in a programme using traditional teaching-and-learning activities such as talk, alongside dance and technologies, supporting the context of a series of topic lessons. The technology predominantly used was the interactive whiteboard (IWB), now common in most primary school classrooms in the UK, combined with the more innovative inclusion of a handheld Sony PSP (PlayStation Portable) device. This allowed the recording of images and video footage of classroom activity that could be viewed back on the large IWB screen with relative ease. As we wanted to explore the temporal dimension of meaning making as the topic progressed, it was necessary in each case to be present for and record all lessons on a topic, as well as keeping observational notes to support analysis. All topics were chosen by the teacher, and were topics they would have covered irrespective of our presence.

In this paper we focus on data collected from a year 2 class (pupils aged 6–7 years), comprising eight sequential topic lessons occurring over a 4-week period. This class was selected for analysis as all scheduled topic lessons took place that had been planned by the teacher, which was not the case for the other two classes. The class had two topic lessons a week: one in their regular classroom, followed the next day by one in the hall. The topic covered the Great Fire of London, as part of the History curriculum. The class had 20 pupils, with 16 speaking English as an Additional Language although none were new to English. All lessons for this topic were transcribed. The research was conducted in accordance with British Psychological Society ethical principles and with prior approval from the Open University's ethics committee. Video and audio data were only collected from pupils who had consented to this beforehand, and whose parents had also consented. The teacher had also given prior consent to involvement in the work.

In this paper we focus our analysis on the use of talk and classroom technologies to support teaching-and-learning. (For analysis regarding other aspects of the programme to support the development of topic understanding see Twiner, 2011.) In terms of the classroom technologies, a wall-mounted IWB was available and used in all eight topic lessons. It is important to emphasise that our purpose was not to provide a model from which to generalise to all schools or educational practices, or to judge the educational 'effectiveness' of particular teachers or learners, but to offer a detailed, contextualised view of how topic understanding could be resourced through the teacher's flexible and responsive approach to activities and content. Detailed case study analysis allows the intricacies of such interactions to be addressed, to identify the emergence and progression of understandings and misunderstandings that could hold wider significance for teaching-and-learning practices.

2.1. Analytic approach

We used sociocultural discourse analysis (SCDA) (Mercer, 2004; Mercer & Littleton, 2007) to explore the use of talk and other tools in order to understand the emergent processes of teaching-and-learning across the series of topic lessons. This entailed viewing the lesson videos in conjunction with reading the transcripts, guided by our research questions, to identify patterns or recurrent issues in the data that we could then explore further.

Due to the amount of data collected from all three classes, it was not feasible to transcribe it all. Therefore we opted to transcribe the verbal interactions for all eight lessons in the topic focused on here as the basis for quantitative concordance analysis (reported in Twiner, 2011), and to use findings from this analysis alongside the video data to identify extracts for further detailed qualitative analysis. These extracts were subsequently transcribed in more detail, to enable them to be used to illustrate our conceptual arguments. In our transcriptions for qualitative SCDA (as presented here) we included line numbers, to aid referencing of the transcribed extract within commentaries. We included all audible talk, and marked any points where talk was inaudible. We used standard punctuation to ease readability of the transcript. We noted extended

pauses that would be noticeable to the listener, but did not note the length of such pauses as we did not feel this would add value to our analysis. Equally we noted where overlaps in contributions occurred.

We identified whether a speaker was a teacher or a named pupil (using a pseudonym), as we were keen to explore both teacher and pupil perspectives. We also included details of movement, including gesture, as it occurred alongside or in emphasising points made in talk. We indicated any objects used and referred to in talk, to aid understanding of the referent when reviewing the data. The primary analytic focus therefore was still on the talk, in line with our sociocultural perspective concerning the centrality of talk, but acknowledged the role that other modes play in conveying communicative intention.

In outlining these conventions it is important to acknowledge, as have other researchers (including [Hammersley, 2010](#); [Kleine Staarman, 2009](#)), that any written transcription is an act of representation and in many ways a translation of verbal and physical activity into written form, thus reducing a multimodal interaction to a monomodal script, however detailed it may be. In doing this, it carries our own interpretation of what is important, and what information is necessary for the transcription to be understood by both ourselves and other readers.

The sociocultural discourse analytic approach we adopted enabled us to incorporate an important temporal dimension in our analysis, focusing in detail on the use of talk whilst also being able to ascertain how processes of teaching-and-learning and negotiation of meaning were mediated by a multiplicity of tools and resources over time. SCDA adopts a view of language as ‘a social mode of thinking – a tool for teaching-and-learning, constructing knowledge, creating joint understanding and tackling problems collaboratively’ ([Mercer, 2004](#), p. 137). This was appropriate to our data and analytic aims, as we intended to explore any progression or evolution of patterns of talking within the groups from which we collected data, as a means of *co-constructing* understanding over time. This implies a focus on talk within the social context in which it occurs, and so on the joint activity, content and structure of talk between participants: how knowledge is jointly constructed, negotiated or disputed. The importance of the talk remaining in the context in which it was produced was highlighted by Mercer:

We have had no wish to reduce the data of conversation to a categorical tally, because such a move into abstracted data could not maintain the crucial involvement with the contextualised, dynamic nature of talk which is at the heart of our sociocultural discourse analysis. ([Mercer, 2004](#), p. 146)

In attempting to address the contextualised nature of activity, a sociocultural perspective recognises that schooling, and all experiences, are part of our larger existence and experience within social worlds. All communicative events are therefore situated experiences, and so are shaped by and addressed to those with whom we share such experiences, or those who do not yet know about them. This highlights the sociocultural conceptualisation of education as a dialogic relationship between teacher, pupils and the resources and environments in which teaching-and-learning experiences take place.

In analysing such a process, [Mercer \(2008\)](#) argued that talk has both a historical and a dynamic aspect. We explored the historical aspect by analysing data from across the series of lessons, in which the historical dimension of the learning was built. It was not possible to be aware of the entire historical aspect of classroom talk, due to the substantial prior work and experiences the class have had to which we could not have access or knowledge. Thus the dynamic aspect of the talk, as participants drew on those historical resources that they perceived to be salient to the ongoing dialogue, was our entry and window onto the ‘common knowledge’ ([Edwards & Mercer, 1987](#)) being constituted, developed and used.

For each of the three classes we collected the following data:

- Video-recordings of lessons on topics chosen by the teacher (approximately 48 h in total, with eight 50-min lessons being the focus of this paper).
- Audio-recordings of teacher talk in these lessons.
- Audio-recordings of a group of pupils within these lessons.
- Field notes from lessons.

Data from one particular class was selected for analysis, as mentioned above, as for the other two classes there were some lessons that could not take place due to teacher absence or other school events taking precedence. Focusing in this way also enabled us to do justice to the complexities of the teaching-and-learning activities. We selected extracts from the lesson data and developed commentaries for presentation here in order to exemplify our identified issues of interest: around the intentionality and improvisation evident in the negotiation of meaning through teacher and pupil use of questions, and adoption of an interactive and dialogic approach (the latter as highlighted through concordance analysis in [Twiner, 2011](#)). Such a focus requires the distinctive approach we offer of attending to the dynamic interplay between teacher and pupil contributions over a series of lessons. In our transcription of the video and audio data and use of extracts to exemplify our analysis we therefore attempted to make the evidence base of our claims apparent to the reader. Importantly we acknowledge that any transcription in itself is a selective and interpretative act, influenced by our own interests in the data ([Hammersley, 2010](#); [Kleine Staarman, 2009](#)). In efforts to render visible the evidence base upon which our interpretations rest, the temporal dimension of our analysis allowed us to present extracts from across the series of lessons and thus spanning a period of four weeks, in illustrating how certain patterns evolved over time.

3. Results and discussion

In this section we explore how intended and instantiated meaning-making trajectories are negotiated through teacher and pupil questions, to build meaning cumulatively around concepts. In our analysis presented here we focus predominantly on talk, with attention to other modes of communication where they were referred to or aligned with aspects communicated through talk. Two of the extracts were derived from talk that was only captured on the teacher's audio microphone, thus in these instances we do not have access to any additional resources that may have been drawn upon or referred to in other modes. In these cases the transcription is restricted to the verbal exchange.

Our detailed analysis enables us to consider the interactional and improvisational nature of meaning making through the concepts of intended and instantiated meaning-making trajectories, which offers a rich appreciation of how to support cumulative negotiation and construction of knowledge. We use these concepts within our SCDA to view the 'reciprocity' of exchanges 'in which ideas are bounced back and forth and on that basis take children's thinking forward' (Alexander, 2008a, p. 24). Such a view enables us to consider how allowance for unknown and unplanned features of classroom discourse can facilitate collaborative and cumulative negotiation of an instantiated meaning-making trajectory.

As mentioned above, extracts are taken from a series of eight sequential History lessons with a year 2 class on the topic of the Great Fire of London. We acknowledge the importance of researching the temporal dimension of learning, in responding to Alexander's (2008a) claim that the progressive nature of meaning making can only truly be appreciated by considering dialogic contributions in the wider context of questions and comments that precede and follow them. We therefore use extracts from across the lessons to exemplify how meanings were built around concepts over time, through talk between pupils and with their teacher. We begin by presenting an *instantiated* meaning-making trajectory, comprising a number of extracts concerning a pupil's developing interpretation of the 'firebreak' concept the teacher had aimed to convey. 'Firebreaks' were an important feature of attempts to stop the Great Fire of London, in pulling down the wooden houses that were otherwise fuelling the fire.

3.1. Meaning making around the concept of firebreaks

Firstly we focus on a series of extracts where a pupil (Lior) evidenced her developing understanding, which in this case was largely through her verbal interactions with peers or the teacher, as well as in her written work. We particularly focused on Lior as she made a number of comments related to this concept during the topic lessons. These comments identify some of her confused and changing ideas, and her struggle to understand concepts the teacher was introducing. All but one of the extracts in this section was taken from when pupils were working at their tables to complete individual work. We argue that unlike in many whole-class periods of work when teachers largely ask most of the questions and have pre-set ideas of what the answers will be, within one-to-one or small group interactions as presented here the teacher needed to improvise his presentation of content as pupils asked the questions and posed sometimes unexpected interpretations.

3.1.1. Use of IWB slides as a prepared resource for dialogic meaning making

The first extract is from the third of the eight lessons, where the teacher had structured an activity to cover some key topic concepts. The introductory IWB slides prepared by the teacher offered some initial contextualising information about why the fire spread and how it was stopped. Following this verbally and technologically resourced introduction, the teacher introduced a task for pupils to do individually at their tables. This involved forming sentences, by cutting out and placing together sentence starters from paper worksheets (three that stated 'The fire spread quickly because...'; and three that stated 'The fire stopped because...') with appropriate sentence endings (six statements). The teacher had modelled some of these sentences on the IWB, incorporating a form of 'matched resources' (Hennessy & Deane, 2006) of the large IWB demonstration template with the individual sheet of statements prepared for pupils to work on.

As Lior was aligning sentence starters and endings on her sheet, the teacher approached and asked some of the others on her table to read out and explain their choices. Lior asked her teacher, Anwar, for some help in pairing two options, to which he replied 'read it, read it. See if it makes sense'. Here he was attempting to support both linguistic development as well as grasp of the topic material, by asking her to put the sentence sections together and to read them out to him. Lior held out two of the sentence sections she had cut out and was considering:

Extract 1: Structuring, working on and supporting a task to contextualise key concepts

Lesson 3, 28.25–29.30

- | | |
|----|---|
| 1. | Lior: The fire spread because firebreaks were used |
| 2. | T: OK. So did it spread quickly because of the firebreaks, or less quickly because of the |
| 3. | firebreaks? |
| 4. | (Pause, Lior still looking at her sheet) |
| 5. | T: Why did they use firebreaks? |
| 6. | Lior (looks up at T): To stop the fire |
| 7. | T: Right so, is the fire going to spread quickly or less quickly? |

8. Lior: Erm, less
9. T: So that wouldn't make sense would it?
10. (Lior shakes head)
11. T: So try another one that would make sense.

Commentary to extract 1

In this we can see that the teacher was trying to help Lior work out appropriate reasons for the fire spreading and stopping, without directly telling her the answer. When she appeared to struggle he de-constructed the conceptual grounding of the sentence ending she had selected about firebreaks, to ask why they were used (line 5), trying to encourage Lior to build connections (Gee & Green, 1998) between the terms and how to use them in sentences – towards a contextualised understanding. Once Lior had articulated why they were used (line 6), she appeared able to make the link between understanding why they were used, and perceiving this as a reason for how the fire was stopped (lines 8 and 10). This interaction could be considered as a 'rich point' (Agar, 1994), or 'frame clash' (Green et al., 2008) – through the rendering visible in talk of competing interpretations. This clash was evident in contrasting Lior's current understanding (line 1), with the teacher's efforts to improvise his response and so match her current need (lines 5–8). As such, it indicates some progression in Lior's instantiated meaning-making trajectory regarding what firebreaks are and why they are important to the topic. The negotiation of meaning was made possible, and subsequent understanding 'richer', as the 'clash' exposed the difference in interpretation. It is through such 'rich points' or 'frame clashes' that make moments of meaning making evident to the teacher and researcher through verbal interaction, that the negotiation of such trajectories can be observed. We now consider how the conceptual knowledge around 'firebreaks' was further explored across the lessons.

Introduction to extracts 2 and 3

Lior's continuing meaning making around the term 'firebreaks' was observable in lesson 7, as pupils learned about the information from Samuel Pepys' diary of the Great Fire – Pepys was a key eyewitness at the time. Particularly we refer again here to where class talk covered the role of firebreaks in stopping the Great Fire, to follow the meaning making around this concept as outlined in extract 1 (two weeks earlier). As the teacher read out facts from his re-presentation of the diary on his prepared IWB slides, he stated that the diary reported how the King had commanded all houses to be pulled down (as firebreaks) to stop the fire. To this, Lior asked: 'where could they live?' and then 'why couldn't they just pull down about five houses?'. The teacher responded to these questions, to adopt an interactive and dialogic communicative approach, in using his prepared extracts on the IWB to show how pulling down just a few houses had not worked. He was able to acknowledge Lior's question, using his slides to quote from the authoritative text of Samuel Pepys' diary reporting the Mayor of London at the time saying 'I have been pulling down houses but the fire overtakes us faster than we can do it'. We see from this that Lior was taking a different orientation to the teacher's and perhaps history's factual depiction of how firebreaks were used to stop the spread of the fire, through the diary of Samuel Pepys, as she oriented instead to the consequences for people's subsequent lives and living conditions. (It was not made clear in the lessons whether Samuel Pepys' house was pulled down.) In building her *instantiated* meaning-making trajectory, Lior had taken a diversion onto the emotional and practical consequences of this action. This verbal exchange between Lior and her teacher identifies the importance of attending to the social and emotional aspects of pupils' reasoning, as suggested by Vass and Littleton (2010), which may not have been anticipated by the curriculum-driven setting of learning objectives. By allowing space to explore such aspects within the teacher's improvisation and responsiveness to his pupils, pupils can be reassured that their concerns about the human dimensions of historical dilemmas are valid, before guiding attention back to the curriculum content to be covered. The cited interaction evidences that for pupils this can be an important facet of their meaning making, in understanding abstract concepts from the distant past.

The teacher demonstrated his knowledge of the event and his responsiveness to his pupils in addressing Lior's question, and attempting to show her why the course of action taken was the only viable one given the severity of the situation. He was able to be flexible in his immediate response, in shifting from his planned coverage of the issue and use of his slides. He adopted an improvisational approach in responding directly to the pupil's questions through secure knowledge of the topic, and orchestration of the prepared visual resources alongside his verbal explanation. Through this he responded to Lior's unexpected query and supported her in collaboratively negotiating a shared, instantiated meaning-making trajectory – as a dialogic accomplishment maintained by their mutual engagement with the issue – that aligned with the historical evidence.

Using the diary of Samuel Pepys as an example and starting point, pupils were asked in this lesson to write their own diaries as if they were Samuel Pepys, as eyewitnesses at the time of the fire. Some initial prompt questions had been prepared on an IWB slide for pupils to write answers to in their diaries. One such question asked 'why are firebreaks taking so long?'. The following short lesson extract occurred as pupils at Lior's table were working on writing their diaries, and identifies how pupils applied their own reasoning in attempts to interpret the historical 'facts':

Extract 2: Pupils querying and re-constructing historical events

Lesson 7, 36.55–37.25

1. Lior (looks up at Cath, who she is sitting next to; Mia also leans in): Can I ask you a
2. question? Why are firebreaks (looks up to IWB) why are firebreaks taking so long?
3. (Cath looks back at Lior but does not speak)

4. Lior (leans over to Ibtihal on the other side of the table): Ibtihal do you know why
5. firebreaks are taking so long?
6. Cath: Cos wood is so heavy
7. Ibtihal: Because the houses are so heavy?
8. (Cath and Ibtihal look down at their sheets, Lior stands up and walks to the teacher who is
9. at another table)

This was followed by Lior joining the table where the teacher was working through the diary activity with other pupils.

Extract 3: Exploring explanations of historical events

Lesson 7, 37.37–38.05 and 38.10–38.20 (teacher's microphone)

10. T: The fire was too quick, that's why it took so long to pull the houses down
11. Lior (to T): because erm, because erm, my friends told me
12. T: What did they think?
13. Lior: Cath thought, because the houses were so heavy
14. T: Mmm
15. Lior: That's what Ibtihal thought. And I thought it was erm, cos the fire was going so quick
16. T: Yeah the fire was going really quickly, and erm... So why, so you think because the fire
17. was spreading too quickly. That's exactly what Samuel Pepys said isn't it? He said
18. (pause), the fire is taking over us before we can do it, faster than we can do it.

Commentary to extracts 2 and 3

From these two consecutive extracts, we can see how Lior drew on her classmates as knowledge resources in thinking about why firebreaks were taking so long to stop the fire. Equally we can see that the suggestions offered by Cath and Ibtihal were logically viable (lines 6 and 7) – that houses made of wood might be heavy and so take a long time to pull down – which indicates again a potential meaning being made that may not have been anticipated by the teacher, and another difference in the intended and instantiated meaning-making trajectories. It appeared, however, that Lior was not convinced by these responses, or preferred to trust a more authoritative source, as she searched for a further opinion from her teacher. This exchange required Lior to interpret and evaluate comments from her peers (lines 13 and 15), followed by the teacher supporting her to work through and evidence reasons (and cite sources of evidence) for why the fire progressed through the city (lines 16–18). We cannot be sure whether Lior heard and copied the suggestion of the teacher (line 10) at the table she had moved to, in giving a similar response to a question for which she was now considering a third answer (line 15), whether she heard and in doing so recognised the appropriateness of the response she heard, or whether there was some other reason for her giving a response other than 'I don't know', or the answers given to her by Cath and Ibtihal. What we can observe however, is that this latter reason was incorporated within the diary Lior wrote, as we now show.

3.1.2. Aligning intended and instantiated meanings through dialogic interaction around resources in other modes

This incorporated reasoning, shifting from the intermental to the intramental, was revealed as the teacher returned to Lior's table and asked her to read her diary to him (after asking some of the others on her table to do the same). The following extract is taken from when Lior was reading some of her diary to the teacher, as it related to the use of firebreaks:

Extract 4: Exploring conceptual understanding, as opportunities to reinforce topic discourse

Lesson 7, 43.55–44.35 (teacher's microphone)

1. Lior: The King has commanded (pause)
2. T: pull
3. Lior: all of the houses to stop the fire (pause) because the fire
4. T: spreading. Instead of going, spreading. (pause) OK
5. Lior: too fast. It is going
6. T: spreading
7. Lior: so quickly because the houses aren't breaking down in time
8. T: Good, fantastic.

Commentary to extract 4

We see that Lior had used the phrase of the fire 'going' in her written piece (lines 4–5), as she had in talking to the teacher at the other group's table (extract 3, line 15). In developing her topic discourse about the Great Fire, the teacher suggested and annotated onto her written diary that this would be more appropriately phrased as 'spreading' (lines 4 and 6: her written diary is shown in Fig. 1 below, and read out in full in extract 5).

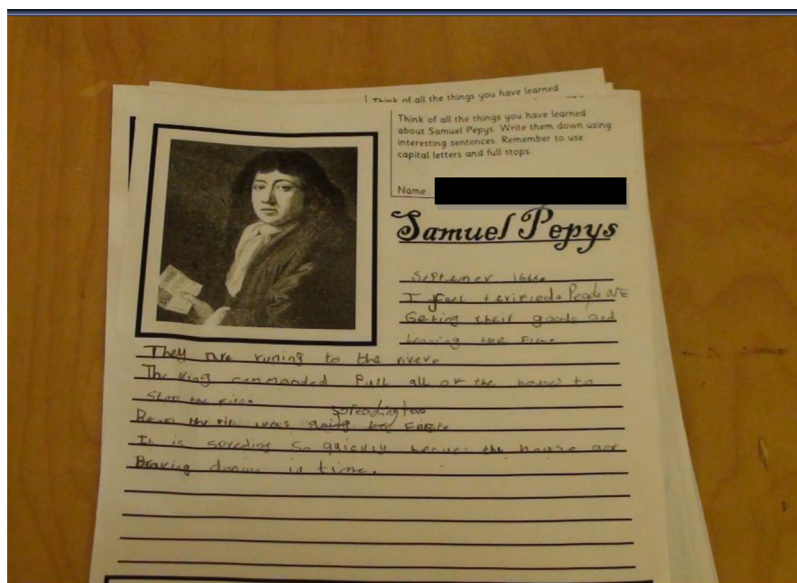


Fig. 1. Lior's diary of the Great Fire of London (for a reading of the text see extract 5 below).

The above interaction was therefore a critical and rich point in Lior's ongoing instantiated meaning-making trajectory, where the teacher explicitly identified the preferred term to talk about the historical event, within his attempt to 'scaffold' (Wood, Bruner, & Ross, 1976) the learning of his pupils. (The teacher had embedded this term in his reformulation of Lior's response at the end of extract 3 – line 17 – but had not drawn attention to it as an important term.) Without this reciprocal verbal interaction, mediated by Lior's written diary and the teacher's prepared prompts on the IWB slide, the difference between the intended meanings – around the fire 'spreading' – and the then instantiated meanings – around the fire 'going' – and the role of firebreaks in stopping this spread would not have been brought to light. Therefore the pupil's and teacher's perspectives were aligned with each other through this exchange. With this re-phrasing, it appeared that in this extract Lior's understanding of why firebreaks were used and why they were taking so long to stop the fire matched that of the teacher. He also suggested this was the case in his comment 'good, fantastic' (line 8). This identifies the crucial role of improvisational and reciprocal talk in rendering current understanding visible and in instantiating shared meaning-making trajectories. We will now show how such meanings made around and with the topic discourse were embedded in the ongoing flow of the lessons.

Introduction to extract 5

At the end of the same lesson (lesson 7), the teacher invited a small number of pupils to read their diaries to the rest of the class. Lior read hers, incorporating this final change from 'going' to 'spreading', as she read from her own work.

Extract 5: Embedding the topic discourse to evidence conceptual understanding

Lesson 7, 49.19–50.00

1. Lior (standing in front of IWB facing class): September 1666. I feel terrible [written
2. 'terrified']. People are getting their goods and leaving the fire. They are running to the
3. river. The King (pause, to T) I can't remember that one (shows sheet to T and points to
4. it, looks at T)
5. T (leans towards sheet): The King has commanded
6. Lior (turns sheet to face her again and looks at it): commanded pull all of those houses to
7. stop the fire, because the fire (pause)
8. T: can you see from there? Come around here (points to side of IWB closest to him),
9. come around here, out of the light.
10. Lior (moves to side of IWB)
11. T (looks at and points on her sheet): Because the fire was spreading too (pause)
12. Lior: fast. It is spreading so quickly because the houses aren't breaking down in time
13. (looks at T)

Commentary to extract 5

Most of this development, or perhaps re-orientation, of Lior's instantiated meaning-making trajectory occurred or was visible in one lesson, through her written work and interactions with her peers and the teacher. Whilst the teacher still supported Lior in reading her written work, in his role as a discourse guide, and in negotiating problems of glare from standing in front of the IWB (lines 8–9), we can see that Lior had incorporated the modelled phrases within her characterisation of events of the Great Fire (line 12).

There is a suggestion that she had arrived at a stable meaning and understanding of the role of firebreaks in stopping the Great Fire, in her response in lesson 8 the next day. In covering some of the slides from the previous lesson on Samuel Pepys' diary, the teacher read out the section on the Mayor's statement about trying to pull houses down, but that the fire was spreading too quickly for this to have any impact. The teacher asked the pupils why firebreaks were not working, to which Lior offered the reason: 'they were pulling as many houses down as they can but the fire was spreading too quick'. We see in this that Lior had spontaneously drawn on similar language, possibly as a form of ventriloquation, to that modelled by the teacher the previous day, of the Mayor complaining about firebreaks taking too long. In this single statement she had also embedded the term 'spreading' instead of 'going' in terms of the fire's progression. Here we see how the social and individual processes were brought into contact, the inter- and intrapersonal, in the creation of common knowledge. The intended and instantiated meanings at this point were aligned, although the trajectory formed in reaching this alignment may not have followed that initially envisaged by the teacher.

Whilst it may seem that the teacher's intended meaning-making trajectory and Lior's instantiated meaning-making trajectory regarding firebreaks had gradually separated, the repeated use of the joint interpretation in Lior's statement above (the teacher's intended interpretation) in lesson 7 (extract 5) indicated that she understood the significance of the teacher's emphasis on the term 'spreading'. Her embedded use of the term in lesson 8 the following day however suggest that she understood and had 'appropriated' (Bakhtin, 1981, 1986) this view, by linking verbally and for herself the key terms and factors a day after they were reinforced by the teacher. Solomon and Black (2008) argued that participation is critical in learners constructing their own understanding on the intrapersonal level, through verbal interaction and co-construction on the interpersonal level, in their case within the maths classroom and discourse. This identifies, in the context of the extracts presented above, how the pupil's questions and interactions with her teacher and peers over the lessons, being an active participant in her own learning, potentially supported her in building an intrapersonal understanding that she was sufficiently confident to share in front of her class. Our analysis of verbal interactions, as mediated by resources in other modes, enabled us to examine how intended and instantiated meaning-making trajectories were aligned or differed, and the work done in collaboratively and cumulatively building a shared, instantiated meaning-making trajectory across the lessons.

In the next section we explore further the potential value of a teacher's dialogic and interactive communicative approach, taking as a point of departure pupils' unexpected questions.

3.2. Questioning the intended interpretation

There were moments during the lessons where pupils asked questions that most likely would not have been part of the teacher's intended meaning-making trajectory. In being asked, however, they highlight the pupils' curiosity about the topic, as well as their apparent fixation with some facts of history they considered to be cruel. They also identify for the teacher what pupils are learning from lesson activities, enabling him to build on them in further scaffolding pupils' understanding. With the teacher pausing in his planned lesson trajectory to respond to these issues, the unexpected questions also identified, for the teacher, some meaning potentials that perhaps needed more collaborative negotiation, as we exemplify in the following two extracts.

During the initial recap in lesson 5 the teacher re-introduced a familiar IWB slide displaying an image of a painting depicting the Great Fire (Fig. 2), at which point the following exchange occurred.

Extract 6: Questioning the historical evidence

Lesson 5, 00.45–01.08

1. T (moves hand over picture on IWB, looking at Ps): in this picture you're seeing the
2. (pause)
3. Ps: Fire
4. T (looks at IWB) the Great Fire spread (moves pointing finger from one side of the picture
5. to the other) all across London isn't it?
6. Lior: Did it actually happen?
7. T (looks at Ps): Absolutely. (holds arms out from elbows) This is what we've been talking
8. about, for the (beats arms into same position) whole last two weeks. This is, (beats
9. arms into same position) actually (moves arms in direction of slide and steps towards
10. IWB) happened. The (lowers right hand and moves left hand over picture on slide)
11. Great Fire, I'm not making it up (holds arms out from elbows and steps to side of IWB),

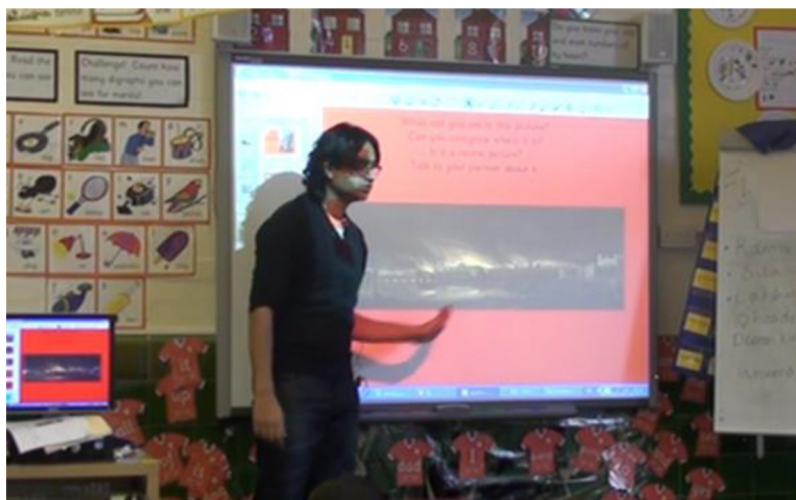


Fig. 2. Image of painting of the Great Fire, lesson 5, 00.45.

12. it's not a story. This (points to picture on slide) happened, (lowers hand) it really
 13. happened. This happened, it's all real. (looks at and raises hand over slide outline at side)

Commentary to extract 6

In the context of a history lesson, it is unlikely that the teacher would have anticipated the question: 'did it actually happen?' (line 6). It seems however, the concept of an event happening 400 years ago was too abstract for some pupils to grasp, and so potentially outside of a sense of 'reality'. In his response he outlined the difference between a 'story' as that which was 'ma[de] up' (lines 11–12) and the historical event of the Great Fire that was 'real' (line 13) and 'actually/really happened' (lines 9–10 and 12–13). This unanticipated contribution was therefore a potential rich point in the pupils' instantiated meaning-making trajectory, in the clash between frames of history and fantasy. It was *turned into* a rich point as it was taken up improvisationally by the teacher to make this distinction clear. As evidenced through our analysis of this apparent shift away from the teacher's intended meaning-making trajectory, in what might otherwise be seen as a glitch in the smooth flow of a well-planned lesson, this highlights the crucial importance and value of the teacher's responsiveness to his pupils in creating meaningful learning experiences.

The exchange also emphasises the importance of evidence within history discourse and practice, as without it there is little way of showing that something 'actually/really happened'. This use of evidence differentiates between the teacher and pupils as novice historians rather than storytellers. In this sense however, we can juxtapose the historical 'facts' with the 'pretend' activities pupils also did as part of this topic: including dance activity in the hall lessons to pretend to represent the activity of the fire around the houses; painting the scene as if they had been there; and the activity they were to do the following week of writing their own diaries to pretend they were eyewitnesses at the time (as outlined in Sections 3.1.1 and 3.1.2). This interweaving of the history discourse around evidence and imaginative activities asking them to 'pretend' may perhaps have blurred the distinction between fact and fantasy for some pupils.

Introduction to extract 7

As the pupils were working to write their diaries during lesson 7, pretending to be eyewitnesses from the past, a similar dialogic opportunity was initiated by Lior, to which the teacher responded flexibly and in accordance with the topic content.

Extract 7: Attending to emotional aspects of meaning making

Lesson 7, 20.10–20.24 and 20.30–20.42 (teacher's microphone)

1. Lior: Anwar, can I ask you a question?
 2. T: Sorry
 3. Lior: If erm, if, where does the King live in London in the past?
 4. T: Where do you think he would live?
 5. Lior: In, a castle.
 6. ...
 7. T: The King is telling them to pull down houses
 8. Lior: But not, why all of them?

9. T: Well all, because the fire's raging everywhere, so he was just saying get rid of, as
 10. many houses as you can to stop the fire spreading.

Commentary to extract 7

Similar to Lior's comment earlier in the same lesson where she voiced a personal and emotional response to the need for firebreaks (as identified in Section 3.1.1: 'why couldn't they just pull down about five houses?'), we see in the extract above how she was again potentially sympathising with people whose houses were pulled down, in questioning the need for such a drastic response (line 8). Thus for Lior, she was still finding it difficult to understand why so many houses needed to be pulled down. Broadly speaking, Lior was following the intended meaning-making trajectory of houses being destroyed to stop the fire. The teacher may not, however, have anticipated her curiosity about the events and compassion for people at the time. This again highlights the importance of social and emotional aspects in how pupils make meaning out of teaching-and-learning experiences (Vass & Littleton, 2010), and therefore the significance of the teacher's choice to build on these comments as stepping stones to understanding (Alexander, 2008a) rather than exclude them as outside the topic of concern. In response to such questions and interactions, the teacher was able to offer context and reasoning for the events, and also to identify where more support was needed to encourage pupils to appropriate the topic discourse.

Within such exchanges, teachers must be confident in their own understanding of the subject content at stake, as pupils work their way towards understanding new concepts. Referring to Sawyer's (2004) conceptualisation of teaching as improvisational, we need to consider how both teachers and learners play a part in managing learning as a social activity – in negotiating and constructing knowledge together. In such an endeavour, for instance harnessing pupils' largely unexpected queries and contributions as hooks on which to build more nuanced understanding, Sawyer emphasised the skill of teachers to be improvisational, drawing on their 'pedagogic content knowledge', which would not be necessary if teaching were a scripted performance which could be rote learned. Thus it is in such improvisational teaching-and-learning moments that the greatest challenge can be posed both to the authority of the teacher and to any 'established' interpretations and meanings. In raising such issues for debate, however, developments in understanding can be gained from the co-construction and negotiation of meanings as made in interaction.

4. Conclusions

Through the extracts presented in this paper we have highlighted the importance of pupils' participation in making meaning of their learning experiences. We focused predominantly on the transformation of meaning potential into meaning making as realised through talk, acknowledging also the influence of other modes brought into interaction through and in conjunction with talk, such as resources presented on the IWB. In framing this we offered a significant extension of Baldry and Thibault's (2006) original concept of the meaning-making trajectory within a dialogic and interactional frame, through the distinction and attention to the dynamic interplay between *intended* and *instantiated* meaning-making trajectories. Thus we explored the 'affordances' (van Lier, 2000) of tasks as they were perceived by the teacher and pupils, in the sense of how opportunities for learning were created, accepted or rejected, in the real-life dynamic of classroom interaction. To do this we contrasted a focus on the teacher's intentions through an interactional perspective that addresses the interplay between the teacher's intentions and the pupils' responses, drawing on the concept of meaning potential, where different meanings can be made around the same issue, concept or resource.

We illustrated how lesson resources were drawn on by teacher and pupils, in building connections between the 'facts' they were learning about, and in collaboratively negotiating shared meanings. We evidenced how both continuity and also cumulation of learning experiences were resourced in the observed lessons by use, repetition and extension (continuity) and progressive integration (cumulation) of a number of resources, activities and concepts across the lessons particularly through the promotion of an interactive and dialogic teaching-and-learning environment. This highlighted a two-way process of explicating and developing understanding, as the teacher showed a willingness to be creatively disrupted in coverage of the curriculum to allow pupil exploration of content. Analysis of classroom talk therefore identified some *breaks* in continuity and cumulation, or rich points in the dialogue that deviated from intended meaning-making trajectories. We showed that when given the time and opportunity to explore these breaks, through teacher improvisation and responsiveness to his pupils as well as pupils spontaneously offering their own interpretations, such instances could be used to help build connections between concepts in a way that was meaningful for the pupils: in the collaborative and cumulative construction of knowledge. This exemplifies the value of the teacher's improvisational approach, in providing learning opportunities for his pupils rather than dictating meanings to be acquired, and being responsive and secure in his topic knowledge, to engage pupils' curiosity. Other researchers have emphasised the benefits of interweaving authoritative periods of instruction with opportunities for dialogic interaction (Hellermann & Pekarek Doehler, 2010; Mercer & Littleton, 2007; Mortimer & Scott, 2003; Seedhouse, 2004; van Lier, 2000; Walsh, 2011). Following from this, and on the basis of the evidence presented here therefore, we argue that at times the content is beneficially provided by the teacher, and at other often unexpected times it is more beneficially explored dialogically by and with the pupils in negotiating an instantiated meaning-making trajectory.

Mindful of the potential value of such negotiation, we evidenced how a teacher's intended meaning-making trajectory and pupils' instantiated meaning-making trajectories may not always match directly onto each other. This does not, however, mean there is a flaw in the teacher's lesson plan, or in the pupils' learning, but it does require some improvisation

and reciprocity from the teacher. The teacher's willingness and ability to explore pupils' interpretations, in improvising from a lesson plan, will necessarily influence the extent to which pupils feel their contributions or queries have been acknowledged, and the extent to which intended and instantiated meaning-making trajectories can be aligned over time. This highlights the importance of pupil participation in lesson activity, as active agents in questioning authoritative sources and collaboratively and cumulatively forging an instantiated meaning-making trajectory. It also exemplifies the need for the teacher to feel secure in his/her subject knowledge when being improvisational, to validate and build on pupils' curiosity and ideas. Therefore the distinction of intended and instantiated meaning-making trajectories offers a useful conceptual tool for teachers and researchers to consider how meanings emerge from different meaning potentials and the potential value of their dialogic negotiation by being explicitly brought into interaction.

In summary, in extending the concept offered by Baldry and Thibault and as a distinctive contribution of our work concerning the temporal and interactional nature of teaching-and-learning, we highlight the significance of exploring the teacher's *intended* meaning-making trajectory in the context of the meaning-making trajectories that are *instantiated* by pupils as lessons unfold over time. We argue for the value of identifying any differences between intended and instantiated meaning-making trajectories, as we refer to them, as valuable teaching-and-learning opportunities for collaboratively constructing and appropriating common topic knowledge. Aligning these concepts with Sawyer's work on teaching as involving disciplined improvisation, we show how the nature of a teacher's response to unexpected situations, either in attempting to adhere to the plan or in exploring pupils' interpretations, influences the negotiation and appropriation of meanings, and the extent to which an intended and instantiated meaning-making trajectory may ultimately be aligned. Highlighting how this process of negotiation and appropriation is observable through attention to classroom interaction has large potential significance for teachers and researchers alike, and requires the distinctive approach we offer: of attending to the dynamic interplay between teacher and pupil contributions over a series of lessons. In this frame, we crucially illustrate how apparent shifts away from the teacher's intended meaning-making trajectory can be characterised not as glitches in the smooth flow of a well-planned lesson, but turned into opportunities for the creation of meaningful, continuous and cumulative learning experiences.

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